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Pilot Test Health Passport to Improve Oral Health, Malnutrition, Food Insecurity in Rural RwandaCountry of Project Implementation: RwandaSponsoring College: Tufts UniversityAssociated Link of Partner NGO: <https://www.moveupglobalworks.org>

We propose a project focused in the Musanze District of Rwanda. In the Musanze district, there are some essential needs that we would like to address. In rural and underserved communities, increased rates of dropouts and poor academic outcomes are due in part to illness. Oftentimes, children fall sick and fail to attend school. Absenteeism leads to poor performance. Some do not miss school but are still not well enough to pay attention in class, resulting in poor academic outcomes. In Rwanda, public schools have no nurse or any other health worker. As community leaders, teachers are the first to identify cases of sickness. While teachers are better positioned to address health promotion, there are no formal resources for health education. Children and families lack basic health information, essential for disease prevention or timely detection and treatment. It is estimated that NTDs infect over 1.5 billion people, or 24 percent of the world's population. In Africa, intestinal worms are the most common NTDs among children. Untreated NTDs lead to cognitive impairment and developmental disabilities, and severe forms can cause acute malnutrition and death. Close to half of Africa's current population is under 18, and school-aged youth are most affected by NTDs. As the child population grows to reach an anticipated 1 billion by 2055, not tackling NTDs would be a missed opportunity and the price of inaction would be unbearable. Rwanda is one of the African countries committed to ending NTDs by 2024. However, the incidence remains high, especially among the school-aged population. Approximately 40% of the school-aged population suffers from intestinal worms.

To address these problems, we would like to adopt the *Ipfuno* (the Knot) framework that Move Up Global has embodied and promoted, to implement effective health education strategies. The current disconnect between schools and health systems remains a major challenge. Our *Ipfuno* framework capitalizes on building linkages between education and community health systems. In Rwanda, public schools have no nurse or any other health worker. As community leaders, teachers are the first to identify cases of neglected tropical diseases and acute malnutrition. They have a better sense of students and families in most need. With our model, schools become the center for community transformation. We will help to train teachers and other community leaders to serve as an extended public health workforce tackling neglected tropical diseases (NTD), malnutrition and other poverty-related conditions.

Our partner organization has developed a CommCare app used by the community health worker to screen NTDs among students at Nyabirehe primary school. The CommCare app is also used by the community health worker to assess food insecurity during regular home visits. This is important because food insecurity and NTDs have a direct correlation to acute malnutrition that can cause other health problems. Furthermore, we propose a Health Passport. This booklet will include essential knowledge in oral health, dietary health, and other priority topics. We will design and implement this Health Passport to offer essential knowledge and skills to students to improve upon their health literacy, well-being, and academic performance. This is a novel health education workbook designed like a passport to ensure a longitudinal health education and validation of individual knowledge acquisition. It will be issued to each child to be used throughout an academic year, and a new volume will be issued upon completion of one passport. Through this booklet, students can share valuable knowledge with family members and equip them with the tools necessary to become changemakers in their community. In order to properly implement these methods, we will use the *Ipfuno* (Knot) framework mentioned previously.

In order to evaluate the effectiveness of our implementations, we will use routinely collected data to assess factors associated with neglected tropical diseases and malnutrition among the school-aged population in rural Rwanda, evaluate non-biomedical parameters to assess the incidence/prevalence of NTDs and malnutrition among the school-aged population in rural Rwanda (TBD), pilot test the Health Passport and evaluate its feasibility and effectiveness in rural Rwanda, and finally, we will collaborate with teachers to establish the implementation and sustainability strategy of the Health Passport.

To implement this project, we plan to collaborate with Move Up Global (MUG), a nonprofit organization that strives to improve access in remote and resource-constrained communities through partnerships with public schools and local community organizations. This organization is based in

Northern Rwanda in the Musanze district and was founded by Anatole Manzi, a born and raised Rwandan who also serves as a deputy chief medical officer and director of clinical quality and health systems strengthening at Partners in Health (PIH). MUG's current initiatives have consisted of installing electricity within the schools, providing computers, creating a library, and offering remote teacher training at the Nyabirehe School. Furthermore, they have also created a soap-making program, started a chicken farm and vegetable garden for the lunch program, and launched a community health initiative to screen students for signs of neglected tropical diseases (NTDs), such as helminthiasis, schistosomiasis, and scabies, which can lead to acute malnutrition.

After completing the project, sustainability will be measured through knowledge acquisition and retention. Further, the level of adoption and integration of this project into the existing public health education at school and community level. Through Health Passports, students will have gained knowledge on oral health, mental health, handwashing, and NTDS that can lead to acute malnutrition, which they can carry throughout their life. Furthermore, having teachers be the main source of health information will enable the project to continue past its implementation. Also, the data from this project plans to be shared with community leaders, the Ministry of Health of Rwanda, and the Rwanda National Biomedical Center, which can help inform other districts and encourage the implementation of these ideas in other schools.

This project's expected outcome is to improve each individual's health, reduce absenteeism, and improve academic performance. Comparing absenteeism rates on account of illness and past academic records with recent ones after launching the Health Passport will help determine if the project's intervention has worked or not. Furthermore, we hope to see a reduced incidence of malnutrition and NTDs in the students and community. Through the increase in health literacy and reduction of malnutrition and NTDs prevalence, the improvement of other health conditions, such as oral health, is also an expected outcome of the project and an improvement in quality of life.

To implement this project, our proposed budget will consist of housing accommodations and meals for the two students implementing the project. It will also include expenses for the implantation of the Health Passport, which consists of curriculum development, graphic design, printing, snacks during education sessions, in-country ground transportation, and translation (English to Kinyarwanda).

Krystal Lwanga is a Ugandan-born Ugandan-Rwandan student majoring in Biology with a minor in Chemical Mechanism and Structure. After graduation, she plans to attend dental school with interest in global oral health. Krystal has always been interested in education. She is currently a research assistant in science education research and has worked as a Learning Assistant for Chemistry one and two. Furthermore, Krystal has previously worked as a Math and Science tutor for an organization called African Community Education (ACE) which provides after-school help to African immigrants and refugees. Through her education experience and interest in healthcare, Krystal looks forward to working on this project that bridges education and healthcare.

Benjamin Katz is a Jewish-American student studying Community Health at Tufts University. After graduation, he plans to go to medical school with an interest in global health and emergency medicine. He has worked with community health workers with the CCAT Initiative at Massachusetts General Hospital that helped resource constrained patients recently released from the hospital, in Copenhagen with an NGO named EXIST that worked with Nigerian sex trafficking victims, and with iTakecontrolhealth, which created an app in order to help lead community driven initiatives in underserved communities in the United States to give voices to their people at the beginning of the pandemic. Ben has seen through his experiences the impact of community health workers and community led initiatives and believes that they have some of the most effective and long lasting interventions. This is what makes him so passionate and confident about this project.

Post-genocide, Rwanda was faced with a big task to improve civil society and the healthcare infrastructure that was destroyed, rendering large segments of the population vulnerable to disease and injury. Since then Rwanda has achieved all of the health-related millennium development goals to significantly increase life expectancy, reduce premature mortality, and improve a wide range of health indicators. This project plans to contribute to the continued peace in this area by providing further healthcare initiatives. Our overall goal is to collaborate with the community to reduce education and health care disparities which long term will increase the quality of life and stability. With the education of students, teachers, and community health workers alike, this program aims to have long-lasting effects that will benefit the greater community for a very long time.